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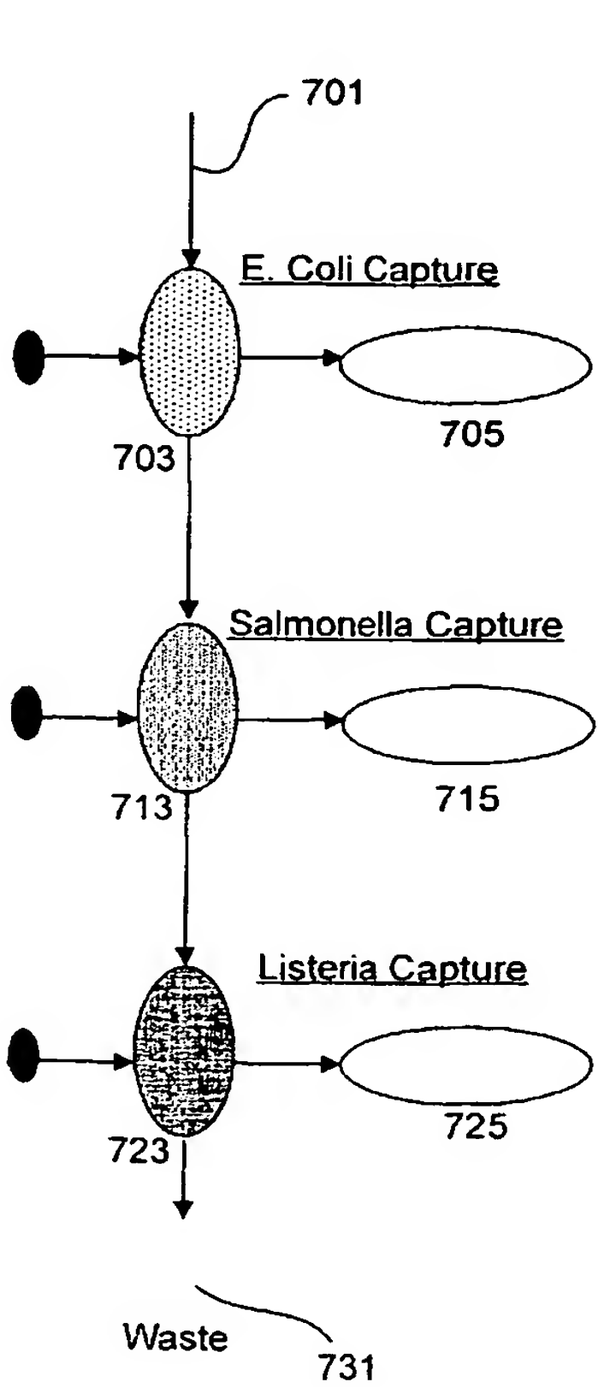
(54) Title: METHODS AND APPARATUS FOR PATHOGEN DETECTION AND ANALYSIS



(57) Abstract: Methods and apparatus for implementing microfluidic analysis devices are provided. A monolithic elastomer membrane associated with an integrated pneumatic manifold allows the placement and actuation of dense arrays of a variety of fluid control structures, such as structures for isolating, routing, merging, splitting, and storing volumes of fluid. The fluid control structures can be used to implement a pathogen detection and analysis system including integrated immunoaffinity capture and analysis, such as polymerase chain reaction (PCR) and capillary electrophoresis (CE) analysis. An analyte solution can be input into the device and pumped through a series of immunoaffinity capture matrices in microfabricated chambers having antibodies targeted to the various classes of microbiological organisms such as bacteria, viruses and bacterial spores. The immunoaffinity chambers can capture, purify, and concentrate the target for further analysis steps.

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